

***2009 Supplement***  
to the  
**Non-Native Invasive Plant  
Environmental Assessment of 2005  
(SEA)**



**Chequamegon-Nicolet Invasive Plant Control Project (SEA)**  
Forestwide Project

United States Department of Agriculture - Forest Service

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## Introduction and Background

The Non-native Invasive Plant Control project began in 2005 with a decision to treat non-native invasive plants (NNIP) over a period of at least a decade. The Forest's NNIP control strategy recognized such a program is long-term in nature and is reassessed for changed conditions and new information about every two years. An amendment in 2007 added 466 new invasive plant sites.

Since then, we added new weed sites to the Forest inventory, analyzed other herbicides, and recognize that several insects to treat spotted knapweed are now more readily available. We also plan to add common mullein, forget-me-not, and brittle-stem hemp-nettle to our high priority list to control these plants where appropriate.

Forest Service policy at FSH 1909.15 §18 direct us to periodically review environmental documentation of on-going projects to determine if correction, supplementation, or revision is needed. New information or changed conditions found during such reviews may lead to reconsideration of the original decision. This supplement to the 2005 NNIP Environmental Assessment (EA) documents the findings of our review. It serves to disclose Changed Conditions of NNIP spread and establishment as well as New Information regarding control methods and species of undesirable invasive plants.

To respond to changed conditions and new information regarding NNIP, we are proposing to amend our 2005 decision in order to treat an additional 1583 NNIP sites. We also would like to add two herbicides (aminopyralid and metsulfuron-methyl) and biological control insects for spotted knapweed to our "toolbox". This Supplement to the 2005 EA discloses the locations and conditions of these additional sites, and analyzes any changes in environmental impacts of the added treatments. It is not independent of the 2005 EA, but serves to supplement the original analysis.

### Highlights of this supplemental assessment:

- Propose these additional actions and why they are needed
  1. New NNIP sites
  2. Additional herbicides - aminopyralid and metsulfuron-methyl
  3. Four biological control insects for spotted knapweed control
  4. Add brittle-stem hemp-nettle, forget-me-not, and common mullein to the A-list
- Discloses public and other agency comments on the proposal, as whether any new issues have surfaced. Issues affected by additional proposed treatments include:
  1. Aquatic systems, Soils, and Hydrology
  2. TES species, especially plantsAll other issues analyzed in the 2005 decision (Human Health & Safety, Cultural/Heritage Resources, Native Plant Communities - non-target plants) remain the same. There are no changes that would affect these issue areas.
- Disclosure of additional sites (table Appendix A & maps Appendix B)
- Disclosure of additional effects.

## Proposed Action and Purpose and Need

The Chequamegon Nicolet National Forest proposes amend the 2005 Invasive Plant Control Project Decision Notice to control NNIP on 1583 new sites located across 340 additional acres, add aminopyralid (eg. Milestone®) and metsulfuron-methyl (eg. Escort®) herbicides to our choice of chemical treatments, and release populations of four insects already present in Wisconsin (see table 2) on appropriate spotted knapweed sites. Control actions on prioritized NNIP sites across the Forest would occur annually over the next decade. The additional sites are identified in detail on attached site tables and maps found in Appendices A and B. All applicable requirements and mitigation measures identified in the original decision would be applied to additional actions.

The purpose and need for action on additional sites remains identical to that found in the original 2005 decision (see USDA 2005b, Decision Notice and Finding of No Significant Impact). In short: *our purpose is to protect and restore native ecosystems and rare plant habitat on the forest by controlling or elimination existing populations of non-native invasive plants. This action is needed because invasive plants currently occur on the Forest and are degrading natural communities, reducing forest productivity, and interfering with recreation. NNIP reduce diversity in natural communities primarily because they occupy space taken by native community components and are often able to out-compete native species for resources. Control is also needed in order to meet the requirements of Federal law, regulation, and policy; and to meet the goals and objectives of the 2004 Forest plan.*

This amendment is needed because we detected new NNIP sites, knapweed insects have become more readily available, the level of concern of three plants is higher, and other herbicides were evaluated by the Forest Service and found to be superior alternatives to some used since 2005.

## Scope

The scope of this proposal is to determine whether or not to amend the July 2005 Decision Notice to treat additional NNIP infestation sites and add control methods. Actions found in the original decision and Finding of No Significant Impact for the CNNF Non-native Invasive Plant Control Project remain in place; the 2005 decision is not subject to appeal. This supplement analyzes the effects of treating the additional 1583 NNIP sites, effects of using aminopyralid and metsulfuron-methyl that might differ from the types of effects analyzed in 2005, and effects releasing four biological control insects on spotted knapweed. A preliminary analysis reveals that the potential effects of these additional actions are essentially the same as described in the 2005 project. Since no new effects are anticipated, no new environmental assessment is needed.

## Public Involvement

Other agencies and groups concerned with the NNIP issue such as Wisconsin Department of Natural Resources, Great Lakes Indian Fish and Wildlife Commission (GLIFWC), NNIP control professionals, local Weed Cooperatives, and Wisconsin Department of Agriculture Trade and Consumer Protection (DATCP) were contacted to obtain the most recent control recommendations. As a result we added two herbicides and four bio-control insects to our treatment methods and moved 3 plants to the A-list category.

A letter and brief project update was sent to the members of the public who commented on the 2005 project. This letter was also sent to Great Lakes Tribal biologists and the WI State NNIP botanist. Four fully-supportive comments were received in reply.

## Issues

1. New sites: We examined the 2005 Environmental Assessment to see what would change by adding new sites, different herbicides, three more species to potentially treat, and different bio-control insects. Based on issue areas from the original assessment we identified potential actions that would trigger mitigations. We determined that for the new sites we needed to analyze: a) if TES plants and animal sites would be affected by actions; b) did any organic farms near the new sites need a buffer from herbicide; c) which sites were near water or had a high water table where we needed to consider special herbicide protocols.
2. Additional herbicides – aminopyralid and metsulfuron-methyl: These chemicals have similar qualities to the herbicides analyzed in 2005 and are actually a bit safer so we may use them in place of some of those. The Forest Service completed Risk Assessments of these broadleaf-specific herbicides. These products are more effective, less expensive, have lower application rates, and are of low toxicity, all qualities that recommend their use. Aminopyralid does have some residual effect that can reduce the need for re-treatment depending on the rate applied and the target weeds (Fact Sheet

2005). This residual effect, on the other hand, may make it undesirable for some areas with existing native plants.

3. Biocontrol insects for knapweed: the four insects in table 2 are already in some counties near the National Forest.
4. Organic Farms: There are no organic farms near any of the additional NNIP sites based on a list provided by the National Organic Program. This organization provides standards for a green buffer of sufficient size or other features to prevent unintended contact by prohibited substances (chemical herbicides) applied to adjacent land (NOP 2005). A buffer of 100 feet would be appropriate since control actions have no effect beyond 100 feet (USDA 2005 NNIP EA pg 27). All new NNIP sites have been reviewed for proximity to organic farms and none are even within 3 miles. Because of the great distance from NNIP site to be treated, there would be no direct or indirect effects from this project on any organic farms and no further analysis is needed.

What does not change from the 2005 Environmental Assessment:

- Effects to Native Plant Communities. The proposed activities on the new sites are the same as described in the original project, effects to native plant communities would be as described in the Environmental assessment (USDA 2005a 4.2.2). In summary, direct and indirect effects would be minimized due to project design criteria. Manual/mechanical methods and herbicide may kill some non-target plants but the overall effect would be positive because it would prevent the loss of species diversity due to uncontrolled NNIP spread (USDA 2005a pg 31). Cumulative effects would be similar, as the combined incremental effects would still remain very small (a decade of treatment on ~0.1% of Forest's land base). The additional acres if negatively impacted, would contribute only a small adverse incremental effect when combined with impacts of other past, present and reasonably foreseeable future activities described in Appendix E of the Environmental Assessment (USDA 2005a p 33).
- Human Environment Health and Safety (EA 3.4.1 and 4.1). There would be no significant direct or indirect effects to human health and safety. Cumulatively there would be no additional risk when combined with past, present, and reasonably foreseeable future activities because overall amounts of herbicide used remains the same each year and the chemicals chosen are deemed safe by the EPA and break down quickly in the environment. The Herbicide Labels and Material Safety Data Sheets consulted are the most current.

## Existing Condition of Affected Environment

This section discusses the change in conditions and new information available since the original EA was prepared. Other conditions not discussed did not change from the original EA. This section establishes the context in which effects from the additional treatments (disclosed in the following Environmental Consequences section) are evaluated.

The desired forest condition is to reduce, minimize, or eliminate invasive plants across the landscape to ensure healthy and sustainable ecosystems. The Chequamegon-Nicolet National Forest does not have a severe problem with invasive plants, however, control action is needed to prevent a more widespread and costly problem in the future. The goal is to treat invasive plants by methods that are effective yet the least harmful to non-target organisms and the environment.

When the Invasive Plant Control Project was initiated, we anticipated that new sites and new species of NNIP would be found due to increased search effort. Crews have been treating sites as well as conducting surveys and monitoring forest projects for invasions. As a result, 1,583 new NNIP sites were located and entered into the Forest database (Figure 1). Note that it is appropriate to describe treating *infested acres* rather than *gross acres* (larger areas with patches of weeds). This is because actions would occur only on the patches of weeds not on the areas in between. The additional 340 acres increases the forest infested area to 1,452 acres (about 0.1% of National Forest land). Most of these new sites are small: 96% are less than 1 acre (half are smaller than a living room, 14 x14 feet) and only 5 are larger than 10 acres (CNNF data). Most of the sites are along roads and other disturbed sites but some are in more pristine areas. Appendix A is a list of the

NNIP sites found in 2007 to 2009. Appendix B is maps of these new sites. The affected area is within 11 Counties in northern Wisconsin and includes the entire Chequamegon-Nicolet National Forest.

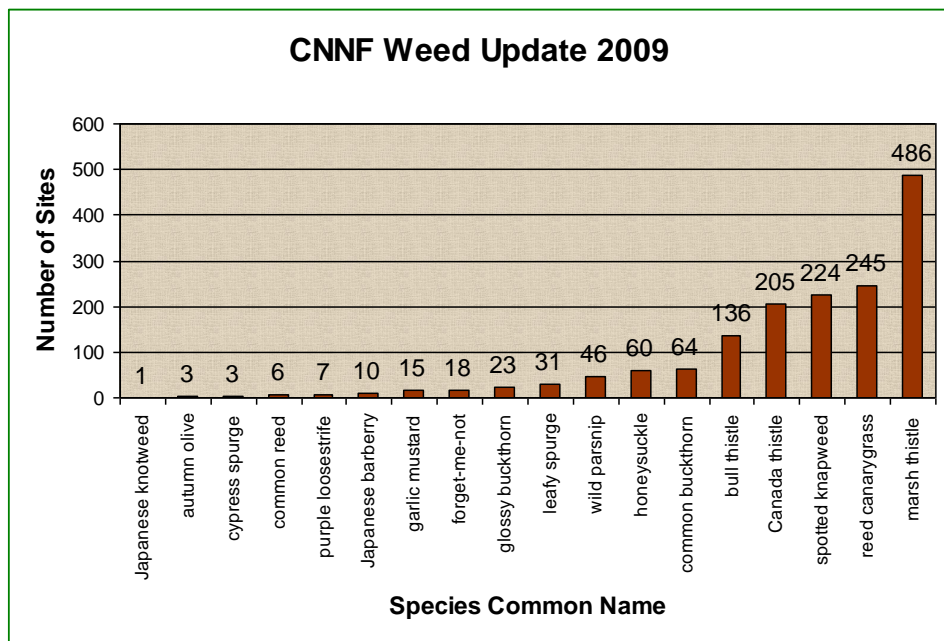


Figure 1 NNIP sites added to database since 2006

### Threatened, Endangered, and Regional Forester Sensitive Species

In the Biological Evaluation for adding sites to this project, the effects were analyzed for five Federally Threatened or Endangered Species and 81 Regional Forester Sensitive Species (RFSS). A total of 27 animals and 54 plants were analyzed a biological evaluation (USDA Forest Service 2009a and 2009b). The affected environment for these analyses included the entire Chequamegon-Nicolet National Forest because NNIP locations are scattered across the Forest. Weed treatment actions on lands of other ownership were considered in the analysis but such information is limited. Due to the dispersion of the treatments and their limited spatial extent, effects to areas outside of the Forest boundary are not anticipated.

There are no **federally threatened** plant sites within a 68 foot *zone of influence* of proposed actions. There are 29 NNIP sites within 68 feet of **RFSS** plants. They are listed in Table 1 below.

Table 1 RFSS plants near NNIP

RFSS Plant	NNIP species	Project Site Number
Algal-like pondweed	spotted knapweed	09130307248
Assiniboine sedge	wild parsnip	09130308374
Assiniboine sedge	marsh thistle	09130307242
Assiniboine sedge	common buckthorn	09130308368
Assiniboine sedge	marsh thistle	09130308371
Assiniboine sedge	marsh thistle	091303074681
Assiniboine sedge	marsh thistle	09130306203
Assiniboine sedge (2 sites)	wild parsnip	09130302591
Blunt-lobed grapefern	reed canarygrass	09130307281
Braun's holly fern	spotted knapweed	0913050511
Braun's holly fern	honeysuckle	09130307343
Butternut	reed canarygrass	09130407537
Butternut	marsh thistle	09130407698

## Chequamegon-Nicolet National Forest

Dwarf bilberry	spotted knapweed	09130407260
Fragrant fern	honeysuckle	09130208107
Ginseng	bull thistle	09130408164
Ginseng	marsh thistle	09130307328
Ginseng	bull thistle	09130408136
Large-leaved sandwort	honeysuckle	09130208107
Marsh horsetail	honeysuckle	09131808006
Northern Wild Comfrey	wild parsnip	09130307365
Northern Wild Comfrey	spotted knapweed	09130507042
Northern Wild Comfrey	marsh thistle	09130307332
Northern Wild Comfrey	Canada thistle	09130308382
Northern Wild Comfrey	honeysuckle	09130308396
Northern Wild Comfrey	wild parsnip	09130302591
Northern Wild Comfrey	spotted knapweed	09130508001
Roundleaf orchis	marsh thistle	09130307570
Western Jacob's-ladder	marsh thistle	09130307567

### Aquatic Systems, Soils, and Hydrology

The Forests boast an abundance of water in the form of rivers, lakes, and wetlands. Soils that developed on this glaciated area of northern Wisconsin vary from pure sand or gravel to heavier loam (USDA Forest Service 2005a section 3.4.3). In some areas, the water table is close to the surface.

The Forest Hydrologist reviewed the new sites and the selected treatments. In this report three elements of aquatic species, water, and soil quality that may be affected by weed treatment actions were addressed. They are 1) water and soil quality may be degraded by contamination from herbicide chemicals; 2) water and soil quality may be degraded by NOT treating NNIP plant infestations; and 3) aquatic species may be impacted by chemical herbicides.

### Other Conditions

- All of the sites to be treated by any method are on federal land, none on private lands.
- The number of sites and acres of infestation recorded in the Forest database varies year by year as NNIP are eliminated or new populations are found.
- The treatment methods needed & available in the original project in 2005 are still suitable. The chemical herbicides and bio-control insects listed there are still approved for same uses. There has been no new science to indicate efficacy, health risks, or environmental risks of the chemicals listed in 2005 have changed.

## Environmental Consequences

### Effects on Water and Soil Resources:

In July 2009, the Forest Hydrologist reviewed the new sites and the new herbicide. There are 612 of the additional sites located in areas of high water table or very permeable soil with ground water within the leach zone for *clopyralid* herbicide. In summary, the Soils Hydrology and Aquatic Organism Resource Report recommends:

1. For sites where the water table is close to the surface or the soil is extremely permeable, the herbicide *clopyralid* would not be used (Appendix C is a list of these sites).
2. Aminopyralid is similar to clopyralid but can persist in the soil and has some residual effect on plants after application. This chemical can percolate through permeable soil and computer models estimate

that in the top 12 inches of soil at an average application rate, between 0.2 to 25 ppb could move through the soil.

3. For sites near open water, only herbicides formulated for use near water would be used.

Soils and hydrology: Herbicide movement through the soil is a concern with clopyralid so it would not be used on sites with a high water table (see Appendix C). Herbicide can move offsite by drift, runoff, and leaching into soil. Long term effects to soil from any of the herbicides are not anticipated because appropriate application techniques specified on the label provide for minimal impacts to the environment.

Water quality: Physical and biological control methods would have little potential to directly or indirectly affect water quality. Any disturbance of soil that could cause suspended sediment in water of wetlands or riparian area would be brief and localized. When herbicides are used according to label specifications, no substantial long-term impacts to groundwater or surface waters are expected (USDA Forest Service 2007c).

Implementation of the proposed action on these 1,583 new sites would have no substantial adverse impacts to soils, hydrology or aquatic organisms. The additional acreage (approx. 340) where actions would take place represents a 30% increase in overall project treatment area, but in the context of the entire national forest, still represents virtually the same cumulative level of treatment (<1% of the Forest's land base) disclosed in the original EA. There are no unique, unusual or differing soil, hydrologic, or aquatic conditions in the additional sites than considered in the original EA. Positive effects of the proposed action are expected as effects would help to restore native plant communities and diversity while reducing soil erosion (USDA Forest Service 2009c).

### **Effects on Threatened, Endangered, and Regional Forester Sensitive Species:**

A Biological Evaluation (BE) of control actions on 1,583 new NNIP sites was prepared (USDA Forest Service 2009a) to determine effects on viability and habitat of Federally Threatened or Endangered (TES) and Regional Forester Sensitive species (RFSS). All herbicides kill plants so non-target effects to plants are plausible but not likely due to protections provided by project design criteria (USDA Forest Service 2005 2.6.1).

#### TES and RFSS Plants

To analyze effect of this project a *zone of influence* boundary was defined as 68 feet. This was calculated as the maximum possible distance that any control action could have any measurable effect and would include mowing, pulling, and herbicide use. The values for herbicide over-spray were estimated as 68 feet if using a backpack sprayer with the droplet size at 100 microns and a wind speed of 15 miles per hour. (Note that project criteria require wind speeds of no more than 10 mph making a 68 foot zone of influence conservative. In addition, to be most effective, droplet size from a backpack sprayer should be 200-300 microns and would not drift as far as smaller droplets.) The mapped invasive plant sites were analyzed using a 100 foot buffer (to allow for mapping error) using ArcMap software to identify potential overlap with TES and RFSS plants.

Twenty-nine RFSS plant sites are within the 68 foot zone of influence (table 1 above). The BE recommends using hand pulling or root stabbing methods at these sites near the RFSS plants to avoid negative impact.

Some of the action sites are within 68 feet of forest stands that have *habitat* that may be suitable for RFSS plants. Due to infestation, an area occupied by NNIP is generally no longer suitable for rare plants. In addition, the area occupied by NNIP tends to be on the edge of appropriate habitat where conditions are usually not ideal for the rare plants. Therefore, cursory surveys conducted by botanists to find the NNIP plants are sufficient and no further surveys for rare plants were recommended in the biological evaluation.

#### TES and RFSS Animals

Although the majority of sensitive animals on the CNNF have the potential to wander through a proposed project area, there's no available evidence to suggest proper application of herbicides represents a direct effect on them (USDA Forest Service 2009b). Herbicides are designed to affect the physiology of plants. As



a result, direct effects were not discussed in the BE for most of the listed species. However, considering indirect impacts, there are a few animals that warrant an analysis of potential effects, either because the animals are extremely sensitive, or because there is a greater potential for some interaction between them and the proposed action (Table 3).

Examples of potential indirect conflicts:

- Food plant may have herbicide on it when consumed
- Animal may be relying on the NNIP plant for food
- Insect may detrimentally rely on NNIP plant for some phase of its reproduction
- NNIP plant may crowd out food plants

The most extreme example of negative interaction would be the West Virginia white butterfly. The interaction is not with treatment actions but by the mere presence of garlic mustard. The butterfly is known to oviposit on garlic mustard instead of native mustards but the hatching larvae cannot survive on the garlic mustard. Note that there is no garlic mustard near any known populations of West Virginia white so there would be no direct or indirect impact by failing to control garlic mustard in the near future.

The other listed insects may be sensitive to herbicide but control actions generally occur in a distant place and/or at a time when the butterflies are not present on the land (USDA Forest Service 2009b).

The species discussed in detail in the BE are listed in Table 3 along with a determination of effect/impact and summary of reason for the determination.

**Table 3 Summary of Animal Biological Evaluation findings**

Species	Common name	determination	reasoning
<b>Federal T &amp; E</b>			
<i>Lynx Canadensis</i>	Canada lynx	No effect	no occurrence on forest, NNIP not forage for prey
<i>Haliaeetus leucocephalus</i>	Bald eagle	No effect	actions will not reduce habitat or prey
<b>RFSS species</b>			
<i>Glyptemys insculpta</i>	wood turtle	No impact	unlikely to be affected by herbicide or herbicide contaminated prey
<i>Incisalia henrici</i>	Henry's elfin butterfly	No impact	may be sensitive to herbicide but low chance of contact
<i>Lycaeides idas nabokovi</i>	northern blue butterfly	No impact	may be sensitive to herbicide but low chance of contact
<i>Oeneis chryxus</i>	Chryxus arctic butterfly	No impact	may be sensitive to herbicide but no occurrences near treatment sites. reducing NNIP would not affect nectar or host plants
<i>Phyciodes batesii</i>	tawny crescent butterfly	No impact	may be sensitive to herbicide but low chance of contact -no treatment sites near butterfly occurrences. Abundant habitat available; incidental loss of host plants not measurable
<i>Pieris virginiensis</i>	West Virginia white butterfly	No impact (beneficial impact)	may be sensitive to herbicide but would not be present during summer treatment of nearby NNIP (negative effect of garlic mustard diminished)

## Bio-Control insects for knapweed

**Table 2 Proposed Bio-Control Insects**

Bio-Control insects for knapweed	
Knapweed root weevil	Cyphocleonus achates
Knapweed root-mining moth	Agapeta zoegana
Lesser knapweed flower weevil	Larinus minutus
Knapweed seed-head weevil	Larinus obtusus

During scoping for the Invasive Plant Control Project back in 2005, several commenters voiced concerns about the use of biological control. Alternative 3 in the EA considered no use of biological control. As discussed in the Environmental Assessment, we only expect the use of biological control insects to affect the target plants and they do not completely eradicate their host plant. The insects under consideration do not become so abundant they reach nuisance levels or are likely to be noticed by the public. No impacts are expected to native wildlife, as none of our animals are dependent on knapweed. In 2008, Michigan farmers who keep European honeybees expressed concern that using biocontrol would wipe out knapweed that their bees have become dependent upon for late summer nectar. Not all knapweed will die and native vegetation will recolonize sites when knapweed plant populations slowly decline from biocontrol damage, thus maintaining a food source for bees.

The use of biological control would enhance native plant biodiversity by helping control invasive plants. Without biological control, we likely would never have the resources to treat the abundant knapweed along our roads and open-land ecosystems. The addition of these insects to the CNNF project will not change the fact that they are already present in small patches across Wisconsin.

## Conclusions

Adding 1,583 sites (340 infested acres) to the Nonnative Invasive Plant Control Project does not change direct, indirect, or cumulative effects since annual treatments will be about the same. The effects of aminopyralid and metsulfuron-methyl are not substantially different than the herbicide effects analyzed for the original project and generally less herbicide would be used due to its greater efficacy. The bio-control insects for knapweed will have no significant unintentional impact.

Although the goal is to treat most NNIP sites over the next decade, actual annual treatments are based upon priority areas and the predicted threat by the NNIP species present. A particular site may require annual treatment the first year or two, then less frequent treatment from there on. Delayed germination of some NNIP seed may require follow-up treatments for more than 5 years. The additional sites are not anticipated to significantly increase the level of annual treatments (we are able to treat about 300-800 sites per year). The annual NNIP target is determined by Regional direction, funding, and availability of personnel. The total number of sites on the Forest is currently about 3,800 on 1,500 infested acres. This translates into a small portion of land in the National Forest (less than 0.1%) to be treated over a decade.

As stated in the original Decision Notice the integrated pest-management approach designed into the project ensures that results would meet the purpose and need with no unacceptable effect to forest resources (USDA 2005b).

## Summary for TES Plants

If the control measures are implemented on the 1,583 proposed sites according to the Methods and Treatment statement and Herbicide label directions, direct and indirect impacts to RFSS will be minimized and will not lead toward federal listing or limit the viability and habitat of the RFSS known to occur in the project area. We assume that removing NNIP from any habitat will improve conditions for TES plants, not make it unsuitable. There are 29 NNIP treatment sites within the 68 foot *zone of influence* (table 7) of RFSS plants.

### Determination of effect for TES plants analyzed in Biological Evaluation

	No impact	Beneficial impact	May impact indiv., not likely to cause trend to listing*	May impact indiv., likely to cause trend to listing*
Assiniboine sedge	X			
Blunt-lobed Grapefern	X			
Braun's holly fern	X			

## Chequamegon-Nicolet National Forest

<b>Butternut</b>	<b>X</b>			
<b>Dwarf bilberry</b>	<b>X</b>			
<b>Fragrant fern</b>	<b>X</b>			
<b>Ginseng</b>	<b>X</b>			
<b>Large-leaved sandwort</b>	<b>X</b>			
<b>Marsh horsetail</b>	<b>X</b>			
<b>Northern Comfrey</b>	<b>X</b>			
<b>Roundleaf orchis</b>	<b>X</b>			
<b>Western Jacob's ladder</b>	<b>X</b>			

### References:

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USDA Forest Service. 2009a. Biological Evaluation -plants for the Chequamegon-Nicolet Invasive Plant Control Project Supplemental Environmental Assessment. Prepared by Leesha Howard-McCauley biologist.

USDA Forest Service. 2009b. Biological Evaluation -animals for the Chequamegon-Nicolet Invasive Plant Control Project Supplemental Environmental Assessment. Prepared by John Schmidt, biologist.

USDA Forest Service. 2009c. Soils Hydrology and Aquatic Organism Resource Report (for the Invasive Plant Control Project Chequamegon-Nicolet National Forest, August 18, 2009 prepared by Sara Eckardt, hydrologist.

NOP 2005. National Organic Program Regulations, Definitions. Available online at:  
<http://www.ams.usda.gov/nop/indexIE.htm>

### Appendix B -map of sites (separate document 6.A\_07)

**Appendix A -list of sites** (Separate document 6.A\_02)

# APPENDIX C

List of all known NNIS weed sites with high water table or rapid to very rapid permeability throughout the profile where no herbicides containing Clopyralid would be used.

01930308338	09130208109	09130307301	09130307497	09130308138	09130308398	09130407220	09130407529	09130408168
09130102119	09130208112	09130307302	09130307498	09130308139	09130308399	09130407221	09130407535	09130408169
091301033	09130208113	09130307303	09130307499	09130308140	09130308403	09130407222	09130407537	09130408170
091301042	09130208114	09130307304	09130307500	09130308141	09130308405	09130407223	09130407541	09130408171
091301044	09130208115	09130307310	09130307501	09130308142	09130308409	09130407224	09130407542	09130408172
09130104453	09130208119	09130307311	09130307502	09130308143	09130308411	09130407225	09130407543	09130408173
09130107101	09130208121	09130307312	09130307503	09130308151	09130308412	09130407226	09130407544	09130408174
09130107104	09130208125	09130307313	09130307505	09130308152	09130308413	09130407227	09130407545	09130408175
0913010711	09130208126	09130307314	09130307506	09130308164	09130308414	09130407228	09130407546	09130408177
09130107111	09130208127	09130307315	09130307507	09130308166	09130308415	09130407229	09130407548	09130408178
09130107116	09130208128	09130307316	09130307508	09130308167	09130308416	09130407230	09130407553	09130408179
09130107118	09130208130	09130307317	09130307510	09130308168	09130308500	09130407233	09130407555	09130408180
091301072	09130208131	09130307318	09130307513	09130308169	09130308501	09130407236	09130407556	09130408181
091301073	09130208133	09130307319	09130307518	09130308170	09130308502	09130407238	09130407559	09130408506
091301074	09130208134	09130307320	09130307523	09130308171	09130308503	09130407239	09130407567	09130408507
091301076	09130208136	09130307323	09130307527	09130308172	09130308504	09130407243	09130407591	09130408508
091301078	09130208137	09130307324	09130307529	09130308173	09130308506	09130407244	09130407592	09130408509
091301079	09130208140	09130307325	09130307531	09130308174	09130308507	09130407257	09130407605	09130507001
09130108003	09130208142	09130307326	09130307539	09130308175	09130308508	09130407258	09130407606	091305070018
09130108004	09130208143	09130307327	09130307542	09130308176	09130308509	09130407260	09130407617	09130507003
09130108007	09130208144	09130307328	09130307545	09130308177	09130308510	09130407261	09130407618	09130507004
09130108008	09130208145	09130307329	09130307546	09130308178	09130308511	09130407268	09130407619	09130507005
09130108009	09130208147	09130307330	09130307548	09130308179	09130308512	09130407269	09130407620	09130507006
09130108101	09130208149	09130307331	09130307551	09130308181	09130308515	09130407270	09130407621	09130507007
09130108102	09130208151	09130307332	09130307560	09130308182	09130308516	09130407271	09130407622	09130507009
09130108103	0913030023	09130307334	09130307561	09130308185	09130308517	09130407274	09130407629	09130507011
09130108107	0913030029	09130307335	09130307562	09130308186	09130308518	09130407275	09130407630	09130507012
09130108108	09130301172	09130307336	09130307563	09130308191	09130308519	09130407276	09130407631	09130507013
09130108109	09130302322	09130307338	09130307564	09130308194	09130308520	09130407277	09130407632	09130507014
09130108110	09130302344	09130307341	09130307565	09130308196	09130308521	09130407279	09130407633	09130507015
09130108111	09130302407	09130307343	09130307566	09130308197	09130308523	09130407282	09130407634	09130507017
09130108112	09130302591	09130307344	09130307567	09130308198	09130308526	09130407283	09130407635	09130507019
09130108113	09130302599	09130307345	09130307568	09130308199	09130308530	09130407284	09130407636	09130507020
09130108115	09130302642	09130307346	09130307569	09130308203	09130308531	09130407290	09130407637	09130507023
09130108117	09130303045	09130307347	09130307570	09130308208	09130308532	09130407291	09130407645	09130507024
09130108121	09130303102	09130307348	09130307571	09130308209	09130308533	09130407292	09130407646	09130507025
09130108122	09130303122	09130307351	09130307575	09130308212	09130308534	09130407294	09130407647	09130507026
09130108124	091303043	09130307352	09130307576	09130308213	09130308535	09130407295	09130407652	09130507027
09130108125	0913030496	09130307353	09130307577	09130308215	09130308536	09130407296	09130407656	09130507028
09130108127	09130305803	09130307357	09130307584	09130308221	09130308537	09130407297	09130407660	09130507032
09130108130	09130305804	09130307369	09130307585	09130308222	09130308538	09130407301	09130407663	09130507034
09130108131	09130305813	09130307370	09130308001	09130308225	09130404317	09130407308	09130407664	09130507035

## Chequamegon-Nicolet National Forest

09130108135	09130306148	09130307371	09130308002	09130308226	09130405513	09130407328	09130407665	09130507036
09130108136	09130306153	09130307373	09130308003	09130308227	09130406155	09130407332	09130407672	09130507039
09130108143	09130306185	09130307374	09130308004	09130308229	09130407100	09130407338	09130407676	09130507042
09130108144	09130306202	09130307376	09130308005	09130308235	09130407102	09130407339	09130407677	09130507110
09130108146	09130306203	09130307380	09130308006	09130308236	09130407103	09130407340	09130407679	09130507200
09130108147	09130306217	09130307381	09130308008	09130308237	09130407104	09130407345	09130407681	09130507215
09130108148	09130306222	09130307382	09130308011	09130308241	09130407105	09130407352	09130407686	09130507221
09130108149	09130306223	09130307383	09130308017	09130308300	09130407107	09130407359	09130407690	09130507251
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09130108155	09130307201	09130307394	09130308021	09130308304	09130407111	09130407363	09130407699	09130508016
09130108156	09130307202	09130307395	09130308023	09130308306	09130407112	09130407364	09130407701	09130508021
09130206229	09130307205	09130307397	09130308024	09130308307	09130407113	09130407366	09130407703	09130508030
09130206284	09130307206	09130307398	09130308025	09130308309	09130407116	09130407367	09130407704	09130508031
09130207002	09130307207	09130307400	09130308027	09130308311	09130407117	09130407368	09130408102	09130508034
09130207122	09130307214	09130307407	09130308031	09130308312	09130407118	09130407371	09130408103	09130508035
09130207124	09130307216	09130307409	09130308032	09130308313	09130407119	09130407377	09130408106	09130508100
09130207129	09130307218	09130307413	09130308033	09130308315	09130407126	09130407378	09130408107	09130508102
09130207135	09130307222	09130307414	09130308035	09130308316	09130407130	09130407384	09130408113	09130508103
09130207144	09130307224	09130307416	09130308036	09130308317	09130407131	09130407386	09130408114	09130508104
09130207146	09130307226	09130307417	09130308046	09130308318	09130407132	09130407389	09130408115	09130508105
09130207148	09130307227	09130307427	09130308047	09130308321	09130407140	09130407391	09130408116	09130508106
09130207155	09130307228	09130307428	09130308055	09130308322	09130407153	09130407393	09130408119	09130508109
09130207158	09130307229	09130307432	09130308058	09130308323	09130407154	09130407395	09130408122	09130508119
09130207161	09130307232	09130307442	09130308059	09130308324	09130407155	09130407396	09130408124	09130508120
09130207163	09130307238	09130307443	09130308062	09130308326	09130407156	09130407397	09130408126	09130508121
09130207169	09130307239	09130307444	09130308063	09130308331	09130407157	09130407398	09130408128	09130509001
09130207170	09130307240	09130307445	09130308065	09130308332	09130407158	09130407399	09130408129	09130509010
09130207184	09130307241	09130307446	09130308069	09130308333	09130407159	09130407401	09130408131	
09130207185	09130307242	09130307448	09130308070	09130308334	09130407160	09130407416	09130408132	
09130207186	09130307243	09130307450	09130308071	09130308335	09130407161	09130407417	09130408133	
09130207187	09130307248	09130307452	09130308073	09130308342	09130407179	09130407418	09130408135	
09130207191	09130307249	09130307453	09130308074	09130308343	09130407189	09130407419	09130408136	
09130207195	09130307250	09130307455	09130308075	09130308346	09130407191	09130407440	09130408137	
09130207196	09130307252	09130307458	09130308077	09130308347	09130407193	09130407441	09130408138	
09130207202	09130307253	09130307460	09130308082	09130308350	09130407194	09130407442	09130408139	
09130207211	09130307254	09130307463	09130308083	09130308351	09130407196	09130407443	09130408140	
09130207212	09130307255	09130307464	09130308084	09130308352	09130407197	09130407444	09130408141	
09130207213	09130307256	09130307465	09130308085	09130308353	09130407198	09130407445	09130408142	
09130207214	09130307257	09130307466	09130308086	09130308355	09130407199	09130407446	09130408143	
09130207216	09130307258	091303074681	09130308088	09130308360	09130407200	09130407447	09130408144	
09130207217	09130307260	09130307469	09130308089	09130308364	09130407202	09130407448	09130408145	
09130207219	09130307261	09130307472	09130308091	09130308365	09130407203	09130407449	09130408146	
09130207224	09130307262	09130307473	09130308093	09130308366	09130407204	09130407460	09130408149	
09130207225	09130307265	09130307476	09130308094	09130308368	09130407205	09130407461	09130408150	
09130207227	09130307270	09130307477	09130308098	09130308382	09130407206	09130407465	09130408151	
09130207228	09130307271	09130307478	09130308099	09130308383	09130407207	09130407482	09130408152	
09130207250	09130307275	09130307481	09130308100	09130308384	09130407208	09130407484	09130408153	
09130207994	09130307277	09130307482	09130308102	09130308385	09130407210	09130407485	09130408154	
09130208100	09130307278	09130307484	09130308105	09130308386	09130407211	09130407491	09130408155	
09130208101	09130307279	09130307485	09130308118	09130308387	09130407212	09130407504	09130408156	
09130208102	09130307293	09130307486	09130308119	09130308388	09130407213	09130407505	09130408157	
09130208103	09130307294	09130307487	09130308120	09130308389	09130407214	09130407507	09130408162	

## Chequamegon-Nicolet National Forest

09130208104	09130307295	09130307488	09130308130	09130308390	09130407215	09130407520	09130408163
09130208105	09130307296	09130307493	09130308135	09130308391	09130407216	09130407521	09130408164
09130208107	09130307297	09130307494	09130308136	09130308392	09130407217	09130407522	09130408165
09130208108	09130307300	09130307495	09130308137	09130308397	09130407219	09130407527	09130408167

### Aquatic Guidelines for Herbicide Use on the CNNF

Herbicide	Use on aquatic Weeds and in Wetlands Allowed	Use on soils with a rapid or very rapid permeability and or a high water table allowed. <sup>2</sup>	Use Adjacent to Water Allowed
<b>Glyphosate</b>	Yes <sup>1</sup>	Yes	Yes <sup>1</sup>
<b>Imazapic</b>	No	Yes	No
<b>Triclopyr</b>	No	Yes	No <sup>3</sup>
<b>Clopyralid</b>	No	No	No
<b>Aminopyralid</b>	No	Yes	No
<b>Metsulfuron Methyl</b>	No	Yes	No

1 Rodeo<sup>®</sup> is the only proposed formation of glyphosate labeled for aquatic use

2 See Appendix A table for these locations

3 Stump and/or basal bark treatment allowed with ester formation, no restrictions on acid and salt formations